



8

SEQUENCE LISTING

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<120> Antibodies

<130> 674523-2012

<140> 10/016,686
<141> 2001-11-02

<150> PCT/GB00/04317
<151> 2000-11-13

<160> 37

<170> PatentIn version 3.1

<210> 1
<211> 243
<212> PRT
<213> Artificial Sequence

<220>
<223> sequence of the mature secreted protein

<400> 1

Glu Val Gln Leu Gln Gln Ser Gly Pro Asp Leu Val Lys Pro Gly Ala
1 5 10 15

Ser Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Ser Phe Thr Gly Tyr
20 25 30

Tyr Met His Trp Val Lys Gln Ser His Gly Lys Ser Leu Glu Trp Ile
35 40 45

Gly Arg Ile Asn Pro Asn Asn Gly Val Thr Leu Tyr Asn Gln Lys Phe
50 55 60

Lys Asp Lys Ala Ile Leu Thr Val Asp Lys Ser Ser Thr Thr Ala Tyr
65 70 75 80

Met Glu Leu Arg Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
85 90 95

Ala Arg Ser Thr Met Ile Thr Asn Tyr Val Met Asp Tyr Trp Gly Gln
100 105 110

Val Thr Ser Val Thr Val Ser Ser Gly Gly Gly Ser Gly Gly Gly
115 120 125

Gly Thr Gly Gly Gly Ser Ser Ile Val Met Thr Gln Thr Pro Thr
130 135 140

Phe Leu Leu Val Ser Ala Gly Asp Arg Val Thr Ile Thr Cys Lys Ala
145 150 155 160

Ser Gln Ser Val Ser Asn Asp Val Ala Trp Tyr Gln Gln Lys Pro Gly
165 170 175

Gln Ser Pro Thr Leu Leu Ile Ser Tyr Thr Ser Ser Arg Tyr Ala Gly
180 185 190

Val Pro Asp Arg Phe Ile Gly Ser Gly Tyr Gly Thr Asp Phe Thr Phe
195 200 205

Thr Ile Ser Thr Leu Gln Ala Glu Asp Leu Ala Val Tyr Phe Cys Gln
210 215 220

Gln Asp Tyr Asn Ser Pro Pro Thr Phe Gly Gly Thr Lys Leu Glu
225 230 235 240

Ile Lys Arg

<210> 2
<211> 68
<212> DNA
<213> Artificial Sequence

<220>
<223> Cassette 1- Translation initiation signal and signal peptide

<400> 2
aagttccac catggatgg agctgtatca tcctttttt ggttagcaaca gctacagg 60
tccactcc 68

<210> 3
<211> 488

<212> PRT

<213> Artificial Sequence

<220>

<223> deduced amino acid sequence for the B7-1.5T4.1 fusion protein

<400> 3

Met Gly His Thr Arg Arg Gln Gly Thr Ser Pro Ser Lys Cys Pro Tyr
1 5 10 15

Leu Asn Phe Phe Gln Leu Leu Val Leu Ala Gly Leu Ser His Phe Cys
20 25 30

Ser Gly Val Ile His Val Thr Lys Glu Val Lys Glu Val Ala Thr Leu
35 40 45

Ser Cys Gly His Asn Val Ser Val Glu Glu Leu Ala Gln Thr Arg Ile
50 55 60

Tyr Trp Gln Lys Glu Lys Lys Met Val Leu Thr Met Met Ser Gly Asp
65 70 75 80

Met Asn Ile Trp Pro Glu Tyr Lys Asn Arg Thr Ile Phe Asp Ile Thr
85 90 95

Asn Asn Leu Ser Ile Val Ile Leu Ala Leu Arg Pro Ser Asp Glu Gly
100 105 110

Thr Tyr Glu Cys Val Val Leu Lys Tyr Glu Lys Asp Ala Phe Lys Arg
115 120 125

Glu His Leu Ala Glu Val Thr Leu Ser Val Lys Ala Asp Phe Pro Thr
130 135 140

Pro Ser Ile Ser Asp Phe Glu Ile Pro Thr Ser Asn Ile Arg Arg Ile
145 150 155 160

Ile Cys Ser Thr Ser Gly Gly Phe Pro Glu Pro His Leu Ser Trp Leu
165 170 175

Glu Asn Gly Glu Glu Leu Asn Ala Ile Asn Thr Thr Val Ser Gln Asp
180 185 190

Pro Glu Thr Glu Leu Tyr Ala Val Ser Ser Lys Leu Asp Phe Asn Met

195

200

205

Thr Thr Asn His Ser Phe Met Cys Leu Ile Lys Tyr Gly His Leu Arg
210 215 220

Val Asn Gln Thr Phe Asn Trp Asn Thr Thr Lys Gln Glu His Phe Pro
225 230 235 240

Asp Gly Gly Gly Ser Glu Val Gln Leu Gln Gln Ser Gly Pro Asp
245 250 255

Leu Val Lys Pro Gly Ala Ser Val Lys Ile Ser Cys Lys Ala Ser Gly
260 265 270

Tyr Ser Phe Thr Gly Tyr Tyr Met His Trp Val Lys Gln Ser His Gly
275 280 285

Lys Ser Leu Glu Trp Ile Gly Arg Ile Asn Pro Asn Asn Gly Val Thr
290 295 300

Leu Tyr Asn Gln Lys Phe Lys Asp Lys Ala Ile Leu Thr Val Asp Lys
305 310 315 320

Ser Ser Thr Thr Ala Tyr Met Glu Leu Arg Ser Leu Thr Ser Glu Asp
325 330 335


Ser Ala Val Tyr Tyr Cys Ala Arg Ser Thr Met Ile Thr Asn Tyr Val
340 345 350

Met Asp Tyr Trp Gly Gln Val Thr Ser Val Thr Val Ser Ser Gly Gly
355 360 365

Gly Gly Ser Gly Gly Gly Thr Gly Gly Gly Ser Ser Ile Val
370 375 380

Met Thr Gln Thr Pro Thr Phe Leu Leu Val Ser Ala Gly Asp Arg Val
385 390 395 400

Thr Ile Thr Cys Lys Ala Ser Gln Ser Val Ser Asn Asp Val Ala Trp
405 410 415

Tyr Gln Gln Lys Pro Gly Gln Ser Pro Thr Leu Leu Ile Ser Tyr Thr
420 425 430

Ser Ser Arg Tyr Ala Gly Val Pro Asp Arg Phe Ile Gly Ser Gly Tyr
435 440 445

Gly Thr Asp Phe Thr Phe Thr Ile Ser Thr Leu Gln Ala Glu Asp Leu
450 455 460

Ala Val Tyr Phe Cys Gln Gln Asp Tyr Asn Ser Pro Pro Thr Phe Gly
465 470 475 480

Gly Gly Thr Lys Leu Glu Ile Lys
485

<210> 4
<211> 592
<212> PRT
<213> Artificial Sequence

<220>
<223> deduced amino acid sequence for the Ig-5T4 fusion protein

<400> 4

Met Gly Trp Ser Cys Ile Ile Leu Phe Leu Val Ala Thr Ala Thr Gly
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Val His Ser Glu Val Gln Leu Gln Gln Ser Gly Pro Asp Leu Val Lys
20 25 30

Pro Gly Ala Ser Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Ser Phe
35 40 45

Thr Gly Tyr Tyr Met His Trp Val Lys Gln Ser His Gly Lys Ser Leu
50 55 60

Glu Trp Ile Gly Arg Ile Asn Pro Asn Asn Gly Val Thr Leu Tyr Asn
65 70 75 80

Gln Lys Phe Lys Asp Lys Ala Ile Leu Thr Val Asp Lys Ser Ser Thr
85 90 95

Thr Ala Tyr Met Glu Leu Arg Ser Leu Thr Ser Glu Asp Ser Ala Val
100 105 110

Tyr Tyr Cys Ala Arg Ser Thr Met Ile Thr Asn Tyr Val Met Asp Tyr

115

120

125

Trp Gly Gln Val Thr Ser Val Thr Val Ser Ser Gly Gly Gly Ser
130 135 140

Gly Gly Gly Gly Thr Gly Gly Ser Ser Ile Val Met Thr Gln
145 150 155 160

Thr Pro Thr Phe Leu Leu Val Ser Ala Gly Asp Arg Val Thr Ile Thr
165 170 175

Cys Lys Ala Ser Gln Ser Val Ser Asn Asp Val Ala Trp Tyr Gln Gln
180 185 190

Lys Pro Gly Gln Ser Pro Thr Leu Leu Ile Ser Tyr Thr Ser Ser Arg
195 200 205

Tyr Ala Gly Val Pro Asp Arg Phe Ile Gly Ser Gly Tyr Gly Thr Asp
210 215 220

Phe Thr Phe Thr Ile Ser Thr Leu Gln Ala Glu Asp Leu Ala Val Tyr
225 230 235 240

A/
M
Phe Cys Gln Gln Asp Tyr Asn Ser Pro Pro Thr Phe Gly Gly Thr
245 250 255

Lys Leu Glu Ile Lys Arg Ala Ser Thr Lys Gly Pro Ser Val Phe Pro
260 265 270

Leu Ala Pro Ser Ser Lys Ser Thr Ser Gly Gly Thr Ala Ala Leu Gly
275 280 285

Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser Trp Asn
290 295 300

Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val Leu Gln
305 310 315 320

Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro Ser Ser
325 330 335

Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn Val Asn His Lys Pro Ser
340 345 350

Asn Thr Lys Val Asp Lys Lys Val Glu Pro Lys Ser Cys Asp Lys Thr
355 360 365

His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser
370 375 380

Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg
385 390 395 400

Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro
405 410 415

Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala
420 425 430

Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val
435 440 445

Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr
450 455 460

AJ
Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr
465 470 475 480

Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu
485 490 495

Pro Pro Ser Arg Asp Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys
500 505 510

Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser
515 520 525

Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp
530 535 540

Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser
545 550 555 560

Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala
565 570 575

Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
580 585 590

<210> 5
<211> 729
<212> DNA
<213> Artificial Sequence

<220>
<223> DNA sequence encoding a 5T4 ScFv designated 5T4ScFv.1

<400> 5
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tcctgcaagg cttctggta ctcattcact ggctactaca tgcactgggt gaagcagagc 120
catggaaaga gccttgagtg gattggacgt attaatccta acaatggtgt tactctctac 180
aaccagaaaat tcaaggacaa gcccattatta actgttagaca agtcatccac cacagcctac 240
atggagctcc gcagcctgac atctgaggac tctgcggctt attactgtgc aagatctact 300
atgattacga actatgttat ggactactgg ggtcaagtaa cctcagtcac cgtctcctca 360
ggtgtggtg ggagcgggtgg tggcggcact ggcggcggcg gatctagtat tgtgtatgacc 420
cagactcccc cattcctgct tgttcagca ggagacaggg ttaccataac ctgcaaggcc 480
agtcagagtg ttagtaatga ttagdttgg taccaacaga agccagggca gtctcctaca 540
ctgctcatat cctatacatc cagtcgctac gctggagtcc ctgatcgctt cattggcagt 600
ggatatggga cggatttcac tttcaccatc agcacttgc aggctgaaga cctggcagtt 660
tatttctgtc agcaagatta taattctcct ccgacgttcg gtggaggcac caagctggaa 720
atcaaacgg 729

<210> 6
<211> 43
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide used to construct flexible linker to join the extracellular domain of B7.1 and ScFv

<400> 6
gggggtggtg ggagcgggtgg tggcggcagt ggcggcggcg gaa 43

<210> 7
<211> 1467
<212> DNA

<213> Artificial Sequence

<220>

<223> DNA sequence encoding a B7-1.5T4.1 fusion protein

<400> 7
atgggccaca cacggaggca gggAACATCA ccatccaAGT gtccatacCT caatttcttt 60
cagctttgg tgctggctgg tctttctcac ttctgttcAG gtgttatCCA cgtgaccaAG 120
gaagtgaaAG aagtggcaAC gctgtcctGT ggtcacaATG tttctgttGA agagctggCA 180
caaactcgca tctactggca aaaggagaAG aaaatggtgc tgactatGAT gtctgggAC 240
atgaatatAT ggcccAGAGTA caagaACCgg accatTTG ATATCACTAA taacctCTCC 300
atttgatcc tggctctgCG cccatctgAC gagggCACAT acgagtgtGT tggctgaAG 360
tatgaaaaAG acgcttCAA gcggGAACAC ctggctGAAG tgacgttATC agtcaaAGCT 420
gacttcccta cacctAGTAT atctgactTT gaaATTCCA CTTCTAATAT tagaaggATA 480
atttgctCAA CCTCTGGAGG TTTCCAGAG CCTCACCTCT CTTGGTTGGA AATGGAGAA 540
gaattaaATG ccatcaACAC AACAGTTCC caagatCCTG AAACtGAGCT ctatgtgtt 600
agcagcaaAC tggattCAA tatgacaACC aaccacAGCT tcAtgtgtCT catcaAGTAT 660
ggacatttaA gagtGAATCA gacCTTCaac tggAAatacaa ccaAGCAAGA gcatttCCT 720
gatggaggCG ggggatCCGA ggtccAGCTT cagcagtCTG gacctgacCT ggtGAAGCCT 780
ggggCTTCAG tgaAGATATC ctgcaAGGCT tctggTTACT cattcaCTGG ctactACATG 840
cactggGTGA agcagAGCCA tggAAAGAGC CTTGAGTGGA ttggacgtat taatCCTAAC 900
aatgggttA ctctctacAA ccagAAATTc aaggacaAGG ccatattaAC tgtagacaAG 960
tcatCCACCA cagCCTACAT ggagCTCCGC agcCTGACAT ctgaggACTC tgcggTCTAT 1020
tactgtGCAA gatctactAT gattacGAAC tatgttatGG actactGGGG tcaagtaACC 1080
tcagtcacCG tctcCTCAGG tggTggTggG agcggTggTg GCGGCACTGG CGGCGGCGGA 1140
tctagtattG tcatgacCCA gactcccACA ttcctgCTTG tttcAGCAGG agacaggGTT 1200
accataACCT gcaAGGCCAG tcagAGTGTG agtaatGATG tagCTTGGTA ccaacAGAAG 1260
ccagggcAGT ctcctacACT gctcatatCC tatacatCCA gtcgctacGC tggagtCCCT 1320
gatcgcttCA ttggcAGTGG atatGGGACG gatttcACTT tcaccatCAG cactttGAG 1380
gctgaAGACC tggcAGTTA tttctgtcAG caagattATA atttcctCC gacgttCGGT 1440
ggaggcACCA agctggAAAT caaataAA 1467

<210> 8
<211> 1796
<212> DNA
<213> Artificial Sequence

<220>
<223> DNA sequence encoding a Ig-5T4 fusion protein

<400> 8

ctcgagccac catggatgg agctgtatca tcctttctt gtagcaaca gtcacaggta	60
tccactccga ggtccagctg cagcagtctg gacctgaccc ggtgaagcct ggggcttcag	120
tgaagatatac ctgcaaggct tctggtaact cattactgg ctactacatg cactgggtga	180
agcagagcca tggaaagagc cttgagtgga ttggacgtat taatcctaacc aatggtgtta	240
ctctctacaa ccagaaattc aaggacaagg ccatattaac tgtagacaag tcattcacca	300
cagcctacat ggagctccgc agcctgacat ctgaggactc tgccgtctat tactgtgcaa	360
gatctactat gattacgaac tatgttatgg actactgggg tcaagtaact tcagtcacccg	420
tctttcagg tgggtgggg agcgggtggtg gcggcactgg cggcgccgga tctagtattg	480
tgatgaccca gactcccaca ttctgcttg tttcagcagg agacagggtt accataaccc	540
gcaaggccag tcagagtgtg agtaatgtat tagcttgta ccaacagaag ccagggcagt	600
ctcctacact gtcatatcc tatacatcca gtcgctacgc tggagtcctt gatcgcttca	660
ttggcagtgg atatggacg gatttcactt tcaccatcag cactttcag gctgaagacc	720
tggcagttta tttctgtcag caagattata attctctcc gacgttcggt ggaggcacca	780
agcttgaat caaacggcc tccaccaagg gcccatcggt cttccccctg gcaccctcct	840
ccaaagacac ctctggggc acagcggccc tgggctgcct ggtcaaggac tactccccg	900
aaccgggtgac ggtgtcgtgg aactcaggcg ccctgaccag cggcgtgcac accttcccgg	960
ctgtcctaca gtctcagga ctctactccc tcagcagcgt ggtgaccgtg ccctccagca	1020
gcttggcac ccagacctac atctgcaacg tgaatcacaa gcccagcaac accaagggtgg	1080
acaagaaaagt tgagccaaa tcttgtgaca aaactcacac atgcccaccc tgcccagcac	1140
ctgaactcct ggggggaccg tcagtcttcc tcttcccccc aaaacccaag gacaccctca	1200
tgatctcccg gaccctgag gtcacatgcg tgggtggtgga cgtgagccac gaagaccctg	1260
aggtaagtt caactggtaac gttggacggcg tggaggtgca taatgccaa acaaagccgc	1320
gggaggagca gtacaacagc acgtaccgtg tggtcagcgt cctcaccgtc ctgcaccagg	1380
actggctgaa tggcaaggag tacaagtgca aggtctccaa caaagccctc ccagccccca	1440

tcgagaaaac catctccaaa gccaaaggc agccccgaga accacaggtg tacaccctgc 1500
ccccatcccg ggatgagctg accaagaacc aggtcagcct gacctgcctg gtcaaaggct 1560
tctatcccag cgacatcgcc gtggagtggg agagcaatgg gcagccggag aacaactaca 1620
agaccacgcc tcccgtgctg gactccgacg gctccttctt cctctatagc aagtcaccg 1680
tggacaagag caggtggcag caggggaacg tcttctcatg ctccgtgatg catgaggctc 1740
tgcacacaacca ctacacgcag aagagcctct ccctgtcccc gggtaaatga ctcgag 1796

<210> 9
<211> 738
<212> DNA
<213> Artificial Sequence

<220>
<223> DNA sequence encoding a B7-2.5T4.1 fusion protein

<400> 9
atggactga gtaacattct ctttgtatg gccttcctgc tctctggtgc tgctccctcg 60
aagattcaag cttattcaa ttagactgca gacctgccat gccaatttgc aaactctcaa 120
aaccaaagcc ttagttagtgc agtagtattt tggcaggacc aggaaaactt gttctgaat 180
gaggtatact taggcaaaga gaaatttgc acgtgttcatt ccaagtatat gggccgcaca 240
agtttgatt cggacagttg gaccctgaga cttcacaatc ttcatatcaa ggacaaggc 300
ttgttatcaat gtatcatcca tcacaaaaag cccacaggaa tgattcgcat ccaccagatg 360
aattctgaac tgcgtatgc tgcataacttc agtcaacctg aaatagtacc aatttcta 420
ataacagaaa atgtgtacat aaatttgacc tgctcatcta tacacggta cccagaacct 480
aagaagatga gtgtttgct aagaaccaag aattcaacta tcgagttatg tggattatg 540
cagaaatctc aagataatgt cacagaactg tacgacgtt ccatcagtt gtctgttca 600
ttccctgtatg ttacgagcaa tatgaccatc ttctgtattc tggaaactga caagacgcgg 660
cttttatctt caccttctc tatagagctt gaggaccctc agcctcccc agaccacatt 720
cctggaggcg gggatcc 738

<210> 10
<211> 246
<212> PRT
<213> Artificial Sequence

<220>
<223> deduced amino acid sequence for the B7-2.5T4.1 fusion protein

<400> 10

Met Gly Leu Ser Asn Ile Leu Phe Val Met Ala Phe Leu Leu Ser Gly
1 5 10 15

Ala Ala Pro Leu Lys Ile Gln Ala Tyr Phe Asn Glu Thr Ala Asp Leu
20 25 30

Pro Cys Gln Phe Ala Asn Ser Gln Asn Gln Ser Leu Ser Glu Leu Val
35 40 45

Val Phe Trp Gln Asp Gln Glu Asn Leu Val Leu Asn Glu Val Tyr Leu
50 55 60

Gly Lys Glu Lys Phe Asp Ser Val His Ser Lys Tyr Met Gly Arg Thr
65 70 75 80

Ser Phe Asp Ser Asp Ser Trp Thr Leu Arg Leu His Asn Leu Gln Ile
85 90 95

Lys Asp Lys Gly Leu Tyr Gln Cys Ile Ile His His Lys Lys Pro Thr
100 105 110

Gly Met Ile Arg Ile His Gln Met Asn Ser Glu Leu Ser Val Leu Ala
115 120 125

Asn Phe Ser Gln Pro Glu Ile Val Pro Ile Ser Asn Ile Thr Glu Asn
130 135 140

Val Tyr Ile Asn Leu Thr Cys Ser Ser Ile His Gly Tyr Pro Glu Pro
145 150 155 160

Lys Lys Met Ser Val Leu Leu Arg Thr Lys Asn Ser Thr Ile Glu Tyr
165 170 175

Asp Gly Ile Met Gln Lys Ser Gln Asp Asn Val Thr Glu Leu Tyr Asp
180 185 190

Val Ser Ile Ser Leu Ser Val Ser Phe Pro Asp Val Thr Ser Asn Met
195 200 205

Thr Ile Phe Cys Ile Leu Glu Thr Asp Lys Thr Arg Leu Leu Ser Ser
210 215 220

Pro Phe Ser Ile Glu Leu Glu Asp Pro Gln Pro Pro Pro Asp His Ile
225 230 235 240

Pro Gly Gly Gly Ser
245

<210> 11
<211> 1518
<212> DNA
<213> Artificial Sequence

<220>
<223> B7 link ScFv sequence

<400> 11
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ctcattcttc tctttgtgct gctgattcgt ctttcacaag tgtcttcaga tggatgaa 120
caactgtcca agtcagtcaa agataaggta ttgctgcctt gccgttacaa ctctccgcat 180
gaagatgagt ctgaagaccg aatctactgg caaaaacatg acaaagtggt gctgtctgtc 240
attgctggaa aactaaaagt gtggcccgag tataagaacc ggactttata tgacaacact 300
acctactctc ttatcatcct gggcctggc ctttcagacc gggcacata cagctgtgtc 360
gttcaaaaga aggaaagagg aacgtatgaa gttaaacact tggcttagt aaagttgtcc 420
atcaaagctg acttctctac ccccaacata actgagtctg gaaacccatc tgcagacact 480
aaaaggatta cctgcttgc ttccgggggt ttcccaaagc ctcgcttctc ttgggtggaa 540
aatggaagag aattacctgg catcaatacg acaattccc aggatcctga atctgaattg 600
tacaccatta gtagccaact agattcaat acgactcgca accacaccat taagtgtctc 660
attnaatatg gagatgctca cgtgtcagag gacttcaccc gggaaaaacc cccagaagac 720
cctcctgata gcaagccccg ggggtgggtgg agcgggtggc gggcagtgg cggcggcgg 780
actagtgagg tccagttca gcagtctggc cctgacccctgg tgaagcctgg ggcttcagtg 840
aagatatcct gcaaggcttc tggttactca ttcactggct actacatgca ctgggtgaag 900
cagagccatg gaaagagcct tgagtggatt ggacgttatta atcctaacaa tggtgttact 960
ctctacaacc agaaattcaa ggacaaggcc atattaactg tagacaagtc atccaccaca 1020
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tctactatga ttacgaacta tggttatggac tactgggtggc aagtaacttc agtcaccgtc 1140
tcttcaggtg gtgggtggag cggtgggtggc ggcactggcg gcggcggatc tagtattgtg 1200

atgaccaga ctccccacatt cctgcttgtt tcagcaggag acagggttac cataacctgc 1260
aaggccagtc agagtgttag taatgtatgt aacagaagcc agggcagtct 1320
cctacactgc tcatatccta tacatccagt cgctacgctg gagtccctga tcgcttcatt 1380
ggcagtggat atgggacgga tttcaacttc accatcagca ctttgcaggc tgaagacctg 1440
gcagtttatt tctgtcagca agattataat tctcctccga cgttcggtgg aggcaccaag 1500
ctgaaaatca aacggtaa 1518

<210> 12
<211> 2090
<212> DNA
<213> Artificial Sequence

<220>
<223> ScFv-IgE

A1
<400> 12
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tgaagatatac ctgcaaggct tctggttact cattcaactgg ctactacatg cactgggtga 180
agcagagcca tggaaagagc cttgagtgga ttggacgtat taatcctaac aatggtgtta 240
ctctctacaa ccagaaattc aaggacaagg ccatattaac ttagacaag tcattcacca 300
cagcctacat ggagctccgc agcctgacat ctgaggactc tgccgtctat tactgtgcaa 360
gatctactat gattacgaac tatgttatgg actactgggg tcaagtaact tcagtcaccg 420
tctttcagg tgggtgggg agcgggtggt gcggcactgg cggcggcggta tctagtttg 480
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gcaaggccag tcagagtgtg agtaatgtatg tagcttgta ccaacagaag ccagggcagt 600
ctcctacact gtcataatcc tatacatcca gtcgctacgc tggagtccct gatcgcttca 660
ttggcagtgg atatggacg gatttcactt tcaccatcag cactttgcag gctgaagacc 720
tggcagttta tttctgtcag caagattata attctctcc gacgttcggt ggaggcacca 780
agcttggaaat caaacggcc tccacacaga gcccatccgt cttcccttg acccgctgct 840
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tcccgagcc ggtgatggtg acctgggaca caggctccct caacgggaca actatgaccc 960
taccagccac caccctcactg ctctctggtc actatgccac catcagcttgc tggaccgtct 1020

cggtgcgtg ggccaagcag atgttacact gccgtgtggc acacactcca tcgtccacag 1080
actgggtcga caacaaaacc tttagcgtct gctccaggga cttcaccccg cccaccgtga 1140
agatcttaca gtcgtcctgc gacggcggcg ggcacttccc cccgaccatc cagtcctgt 1200
gcctcgtctc tgggtacacc ccagggacta tcaacatcac ctggctggag gacgggcagg 1260
tcatggacgt ggacttgtcc accgcctcta ccacgcagga gggtgagctg gcctccacac 1320
aaagcgagct caccctcagc cagaagcact ggctgtcaga ccgcacctac acctgccagg 1380
tcacctatca aggtcacacc tttgaggaca gcaccaagaa gtgtgcagat tccaacccga 1440
gaggggtgag cgcttaccta agccggccca gccgcgtcg cctgttcata cgcaagtcgc 1500
ccacgatcac ctgtctggg gtggacctgg cacccagcaa ggggaccgtg aacctgac 1560
ggtccccggc cagtggaaag cctgtgaacc actccaccag aaaggaggag aagcagcgca 1620
atggcacgtt aaccgtcacf tccaccctgc cggtggcac ccgagactgg atcgaggggg 1680
agacctacca gtgcagggtg acccaccctt acctgcccag gccctcatg cggtccacga 1740
ccaagaccag cggcccggt gctgccccgg aagtctatgc gtttgcgacg ccggagtggc 1800
cggggagccg ggacaagcgc accctcgccct gcctgatcca gaacttcatg cctgaggaca 1860
tctcggtgca gtggctgcac aacgaggtgc agctccggc acggccggcac agcagcgc 1920
agccccgcaa gaccaaggc tccggcttct tcgtttcag ccgcctggag gtgaccagg 1980
ccgaatggga gcagaaagat gagttcatct gccgtgcagt ccatgaggca gcgagccct 2040
cacagaccgt ccagcgagcg gtgtctgtaa atcccgtaa atgagagctc 2090

<210> 13
<211> 945
<212> DNA
<213> Artificial Sequence

<220>
<223> B7-EGF

<400> 13
atggcttgca attgtcagtt gatgcaggat acaccactcc tcaagttcc atgtccaagg 60
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caactgtcca agtcagtgaa agataaggta ttgctgcctt gccgttacaa ctctccgc 180
gaagatgagt ctgaagaccg aatctactgg caaaaacatg acaaagtggt gctgtctgtc 240
attgctggga aactaaaagt gtggcccgag tataagaacc ggactttata tgacaacact 300
acctactctc ttatcatcct gggcctggtc ctttcagacc ggggcacata cagctgtgtc 360

gttcaaaaga aggaaagagg aacgtatgaa gttaaacact tggcttagt aaagttgtcc 420
atcaaagctg acttctctac ccccaacata actgagtctg gaaaccatc tgcagacact 480
aaaaggatta cctgcttgc ttccgggggt ttcccaaagc ctcgcttctc ttgggtggaa 540
aatggaagag aattacctgg catcaatacg acaattccc aggatcctga atctgaattg 600
tacaccatta gtagccaact agatttcaat acgactcgca accacaccat taagtgtctc 660
attaaatatg gagatgctca cgtgtcagag gacttcacct gggaaaaacc cccagaagac 720
cctcctgata gcaagccccg gggtgtgg agcggtggtg gcggcagtgg cggcggcgga 780
actagtaata gtgactctga atgtcccctg tcccacgatg ggtactgcct ccatgatgg 840
gtgtgcatgt atattgaagc attggacaag tatgcatgca actgtgttgt tggctacatc 900
ggggagcgat gtcagtaccg agacctgaag tggtggaac tgcbc 945

<210> 14
<211> 1263
<212> DNA
<213> Artificial Sequence

<220>
<223> canine 5T4 polypeptide having the amino acid sequence

A1
<400> 14
atgcctgggg ggtgctcccg gggccccgcc gccggggacg ggcgggtgcg gctggcgcg 60
ctggcgctgg tgctcctggg ctgggtctcc tcgtcctcgc tcacctcctg ggcccccctcc 120
gccggccct ccacgtcgcc gccggcctcc gcggcgtccg ccccgccccc gctgccgggc 180
cagtcccccc agccttgcga gtgctcggag gcggcgcgca cggtaagtgc cgtaaccgc 240
aacctgaccg aggtgcccgc ggacctgccc ccctacgtgc gcaaccttt cctcacgggc 300
aaccagctgg cggtgctgcc cccggcgcc ttgcggccgc ggccgcccgt ggccgagctg 360
gccggcgctca acctgagcgg cagcagcctg cgggaggtgt ggcggcggcgc ttgcagcac 420
ctgcccagcc tgccgcagct cgacctcagc cacaacccgc tggcaacct cagcgccttc 480
gccttcggcgg gcagcgcacgc cagccgctcg ggccccagcc ccctggtgaa gctgatgctg 540
aaccacatcg tgccccccga cgaccggcg ggaaaccgga gcttcgaggg catggtgccg 600
gctgcccctcc gagcggggccg cgcgcttcgc gggctgcagt gcctggagct ggccggcaac 660
cgcttcctct acttgccctcg cgacgtcctg gcccagctac cccggcctccg gcacactggac 720
ctgcgcacaaca actccctggt gagcctcacc tacgtgtcct tccgcaacct gacgcacttg 780

gagagcctcc acctggagga caacgccttc aaggccttc acaacgccac cctggcggag 840
ctgcagagcc tgccccacgt ccgggtcttc ctggacaaca acccctgggt ctgcgattgt 900
cacatggcag acatggtggc ctggctcaag gagacagagg tggtgccggg caaagccggg 960
ctcacctgtg cattcccgga gaaaatgagg aatcgggccc tcttggaaact caacagctcc 1020
cacctggact gtgaccctat cccctcca tccctgcaga cttcttatgt cttccctagg 1080
attgtcttag ccctgtatagg cccatcttc ctactggttt tgtatggaa ccgcaagggg 1140
ataaaagaagt ggatgcataa catcagagat gcctgcaggg atcacatgga agggtatcac 1200
tacagatacg aaatcaatgc agaccccagg ttaacaaacc tcagttccaa ttccggatgtc 1260
tga 1263

<210> 15
<211> 420
<212> PRT
<213> Artificial Sequence

<220>
<223> canine 5T4 polypeptide having the amino acid sequence
<400> 15

Met Pro Gly Gly Cys Ser Arg Gly Pro Ala Ala Gly Asp Gly Arg Leu
1 5 10 15

Arg Leu Ala Arg Leu Ala Val Leu Leu Gly Trp Val Ser Ser Ser
20 25 30

Ser Leu Thr Ser Trp Ala Pro Ser Ala Ala Ser Thr Ser Pro Pro
35 40 45

Ala Ser Ala Ala Ser Ala Pro Pro Pro Leu Pro Gly Gln Cys Pro Gln
50 55 60

Pro Cys Glu Cys Ser Glu Ala Ala Arg Thr Val Lys Cys Val Asn Arg
65 70 75 80

Asn Leu Thr Glu Val Pro Ala Asp Leu Pro Pro Tyr Val Arg Asn Leu
85 90 95

Phe Leu Thr Gly Asn Gln Leu Ala Val Leu Pro Pro Gly Ala Phe Ala
100 105 110

Arg Arg Pro Pro Leu Ala Glu Leu Ala Ala Leu Asn Leu Ser Gly Ser
115 120 125

Ser Leu Arg Glu Val Cys Ala Gly Ala Phe Glu His Leu Pro Ser Leu
130 135 140

Arg Gln Leu Asp Leu Ser His Asn Pro Leu Gly Asn Leu Ser Ala Phe
145 150 155 160

Ala Phe Ala Gly Ser Asp Ala Ser Arg Ser Gly Pro Ser Pro Leu Val
165 170 175

Glu Leu Met Leu Asn His Ile Val Pro Pro Asp Asp Arg Arg Gln Asn
180 185 190

Arg Ser Phe Glu Gly Met Val Ala Ala Ala Leu Arg Ala Gly Arg Ala
195 200 205

Leu Arg Gly Leu Gln Cys Leu Glu Leu Ala Gly Asn Arg Phe Leu Tyr
210 215 220

Leu Pro Arg Asp Val Leu Ala Gln Leu Pro Gly Leu Arg His Leu Asp
225 230 235 240

Leu Arg Asn Asn Ser Leu Val Ser Leu Thr Tyr Val Ser Phe Arg Asn
245 250 255

Leu Thr His Leu Glu Ser Leu His Leu Glu Asp Asn Ala Leu Lys Val
260 265 270

Leu His Asn Ala Thr Leu Ala Glu Leu Gln Ser Leu Pro His Val Arg
275 280 285

Val Phe Leu Asp Asn Asn Pro Trp Val Cys Asp Cys His Met Ala Asp
290 295 300

Met Val Ala Trp Leu Lys Glu Thr Glu Val Val Pro Gly Lys Ala Gly
305 310 315 320

Leu Thr Cys Ala Phe Pro Glu Lys Met Arg Asn Arg Ala Leu Leu Glu
325 330 335

Leu Asn Ser Ser His Leu Asp Cys Asp Pro Ile Leu Pro Pro Ser Leu

340

345

350

Gln Thr Ser Tyr Val Phe Leu Gly Ile Val Leu Ala Leu Ile Gly Ala
355 360 365

Ile Phe Leu Leu Val Leu Tyr Leu Asn Arg Lys Gly Ile Lys Lys Trp
370 375 380

Met His Asn Ile Arg Asp Ala Cys Arg Asp His Met Glu Gly Tyr His
385 390 395 400

Tyr Arg Tyr Glu Ile Asn Ala Asp Pro Arg Leu Thr Asn Leu Ser Ser
405 410 415

Asn Ser Asp Val
420

<210> 16

<211> 47

<212> DNA

<213> Artificial Sequence

<220>

<223> oligonucleotide used to construct flexible linker to join the extracellular domain of B7.1 and ScFv

<400> 16

ctagttccgc cgccgccact gcccacca ccgctccac cacc

47

<210> 17

<211> 38

<212> DNA

<213> Artificial Sequence

<220>

<223> Forward primer used in PCR reaction to introduce 5' EcoR1 and 3' Sma I sites

<400> 17

ctcgaattcc accatggctt gcaattgtca gtttatgc

38

<210> 18

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Reverse primer used in PCR reaction to introduce 5' EcoR1 and 3' Sma I sites

AI

<400> 18
ctccccgggc ttgctatcag gagggtcttc 30

<210> 19
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer used to amplify 5T4 specific ScFv

<400> 19
ctcaactatgt aggtccagct tcagcagtc 29

<210> 20
<211> 44
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer used to amplify 5T4 specific ScFv

<400> 20
ctcgcgccg cttaccgttt gatttccagc ttgggtgcctc cacc 44

<210> 21
<211> 87
<212> DNA
<213> Artificial sequence

<220>
<223> complementary single stranded oligonucleotide encoding a translation initiation sequence and the human immunoglobulin kappa light chain signal peptide

<400> 21
ctagactcga gccaccatgg gatggagctg tatcatcctc ttcttggttag caacagctac 60
aggtgtccac tccgaggtcc agctgca 87

<210> 22
<211> 79
<212> DNA
<213> Artificial Sequence

<220>
<223> complementary single stranded oligonucleotide encoding a translation initiation sequence and the human immunoglobulin kappa light chain signal peptide

<400> 22
gctggacctc ggagtggaca cctgttagctg ttgctaccaa gaagaggatg atacagctcc 60

atcccatggg ggctcgagt

79

<210> 23
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer used to amplify 5T4 ScFv

<400> 23
gtccagctgc agcagtctgg

20

<210> 24
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer used to amplify 5T4 ScFv

<400> 24
cgtttattt caagcttgggt gc

22

<210> 25
<211> 40
<212> DNA
<213> Artificial Sequence

181
<220>
<223> PCR primer used to amplify HIgG1 constant region

19
<400> 25
gcgcagaattt gaaatcaaac gggcctccac caagggccca

40

<210> 26
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer used to amplify HIgG1 constant region

<400> 26
gcgcctcgag tcatttaccc ggagacaggg

30

<210> 27
<211> 40
<212> DNA
<213> Artificial Sequence

Aly

<220>
<223> PCR primer used to amplify fusion construct

<400> 27
gcgcaagctt gaaatcaaac gggcctccac acagagccca 40

<210> 28
<211> 31
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer used to amplify fusion construct

<400> 28
gcgcctcgag tcatttaccg ggatttacag a 31

<210> 29
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer used to amplify DNA

<400> 29
ggactagtaa tagtgactct gaatgtccc 29

<210> 30
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer used to amplify DNA

<400> 30
attagcggcc gcttagcgca gttcccacca cttc 34

<210> 31
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> B7-Sbf primer for B7-5T4 scFv

<400> 31
atcgccctgca ggccaccatg gcttgcatt gtcag 35

<210> 32
<211> 34

<212> DNA
<213> Artificial Sequence

<220>
<223> 5T4sc-RI primer for B7-5T4 scFv

<400> 32
gcgcgaattc ttaccgttg atttccagct tggt 34

<210> 33
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> L-Sbf primer for L-5T4scFv

<400> 33
atccctgca ggccaccatg gatatggagct gtat 34

<210> 34
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> 5T4sc-RI primer for L-5T4scFv

<400> 34
gcgcgaattc ttaccgttg atttccagct tggt 34

AJ
<210> 35
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> L-Sbf primer used to prepare L-5T4 scFv

<400> 35
ctagtaccgg tggtggtggg agcggtggtg gcggcagtgg cggcggcg 48

<210> 36
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> 5T4sc-RI primer used to prepare L-5T4 scFv

<400> 36

Gly Gly Gly Gly Ser Gly Gly Gly Ser Gly Gly Gly Ser

1

5

10

15

<210> 37
<211> 76
<212> DNA
<213> Artificial Sequence

<220>
<223> Leader sequence in pBS II

A | <400> 37
ctagacctgc aggccaccat gggatggagg tgtatcatcc tcttcttggt agcaacagct 60
acaggtgtac actccc 76

✓

